

RoadRunners BRR-L Programming Guide



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Introduction

Scanning a series of programming bar code labels can configure the scanner.

The scanner must be properly powered before programming. The scanner will acknowledge a good and valid programming barcode label reading with two beeps and a green enlightening. It will give two other beeps (lower tone) and a red enlightening of the RSL led for either an invalid or bad reading.

Please do not read the programming barcodes while being connected to the BaracodaManager.

PROGRAMMING OPTIONS:

Programmable options are divided into 2 groups. The first groups includes the options that show the general behaviour of the scanner. The second group sets the decoding parameters for each barcode symbology.

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1/ Introduction

Please verify that your Roadrunners has a firmware version equal or superior to 3.1 before using it with this programming Guide. Some functionality may not work with older versions of the firmware. Refer to the BaracodaManager documentation in order to know how to upgrade your scanner.

The RoadRunners can be programmed by scanning barcode labels which contain commands for the 1D decoder. Programming labels must be Code128, with specific starting and ending characters. These labels will always be read, even if Code128 symbology is disabled.

The scanner will acknowledge a good and valid programming bar code label reading with two beeps and a green enlightening of both leds. It will give two other beeps (lower tone) and a red enlightening of the RSL led for either an invalid or bad reading.

Please do not read the programming barcodes while being connected to the BaracodaManager.

Programmable options are divided into 2 groups. The first group includes the options that show the general behaviour of the scanner. The second group sets the decoding parameters for each barcode symbology.

2/ General Configuration

2.1/ Reset all parameters:

The reading of the "Default settings" label turns all the parameters of the BRR-L back to default settings and switches it off.



2.2/ Erase all barcodes in memory

The RoadRunners has the ability to store barcodes in its internal memory (both in batch mode and in Real Time with "No Data Loss Mode" ON). By reading the following barcode you will empty the internal memory of the scanner.



2.3/ Baracoda advanced features

2.3.1/ Switch on delay

In order to switch on the BRR-L in its standard mode, you should just press the trigger. You can set up the scanner to be switched on only after keeping the trigger pressed for two seconds by reading the appropriate barcode.



2.3.2/ Shutdown timers

There are two different 'shutdown timers' :

- **when connected timer** : delay between the last scanned barcode and the switch off when the scanner is connected to a host
- **Not connected timer** : delay between the last scanned barcode and the switch off when the scanner is not connected to any host

It is possible to set those timers to 'infinite'. In that case, the scanner will stay all the time ON.

Set shutdown timers to infinity



By default, timers value are :

when connected timer = 20 minutes
Not connected timer = 10 minutes

Set shutdown timers to defaults



2.3.3/ No data loss mode and Baracoda Header

Baracoda header:

It is a proprietary data encapsulation. It is necessary to activate it to use the Baracoda keyboard emulation (Kemul) and Hyper terminal.

The Baracoda header is enabled in default settings

No data loss mode:

Baracoda has developed a proprietary communication protocol in order to enhance the security of the Bluetooth transmission.

Every barcode sent to the host must be acknowledged by the host (until then, the scanner will transmit it again and again).

This acknowledgment is disabled in default settings. It is strongly recommended to set this protocol acknowledgment on when using the scanner with the BaracodaManager.

Enable Baracoda header
+ "No Data loss mode" ON



Disable Baracoda header
+ "No data loss mode" OFF

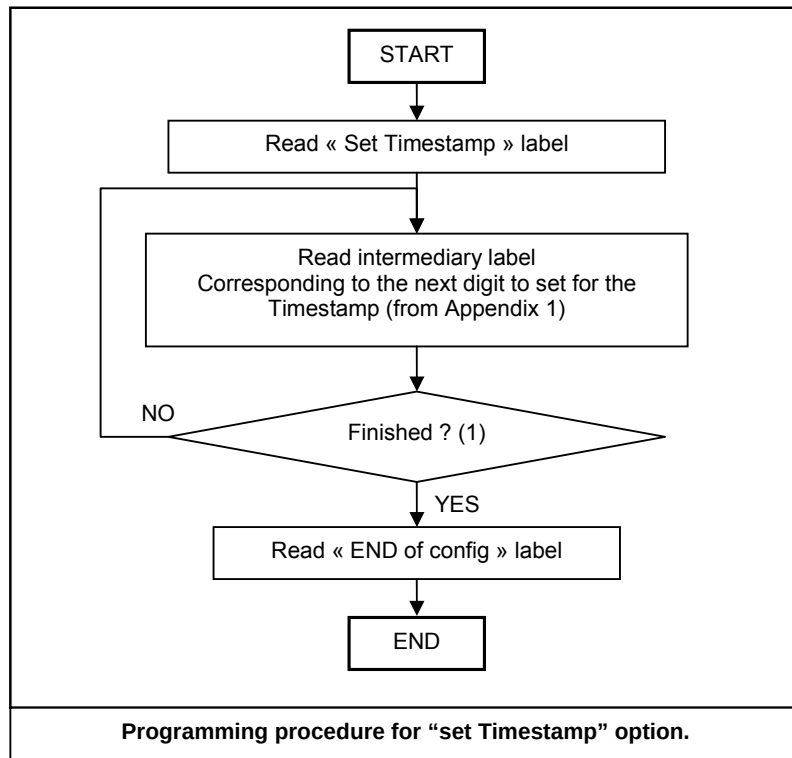


Enable Baracoda header
+ "No Data loss mode" OFF (*)



2.3.4/ Timestamp Option

Time stamp can be configured (ON/OFF, set new date and new time) by the following configuration barcodes



Noted that the timestamp must fit the specific following format:

{YY} {MM} {DD} {HH} {MM} {SS}

The setting is made by scanning the 0-9 labels (Appendix 1) as on a calculator; following the timestamp format shown above.

For example: to set the current time at 16th May 2007, 3.25 pm, the user will scan:

- "Set Timestamp" label,
- "0" label,
- "7" label,
- "0" label,
- "5" label,
- "1" label,
- "6" label,
- "1" label,
- "5" label,
- "2" label,
- "5" label,
- "0" label,
- "0" label,
- "end of config" label.

2.4/ Reading Mode

- In trigger mode, pressing the trigger will activate the beam.
- The Aiming trigger mode has been developped for users who need to scan barcodes very close each others and they have to be sure to always read the corect one. Once in this mode, in order to read a barcode user will have to press the trigger twice. Pressing it the first time will switch on the beam but will not switch on the decoder (thus allowing user to aim at the correct barcode) while pressing the trigger the second time will activate the decoder thus allowing the RoadRunners to actually decode the barcode.
- In autoscan mode the beam will be continuously on
- In Smart Autoscan, for a battery power consumption optimisation issue, the scanner will be continously flashing.

Trigger (*)



Autoscan



Aiming Trigger Mode



Smart Autoscan



2.5/ Operating Mode

Real Time mode (standard mode): barcodes are transmitted in real time to the remote host device/terminal (with optional acknowledgment beep from the host to the scanner).

User can choose if the scanner, when not connected, should read, memorize and later automatically upload the barcodes or shouldn't read the barcodes (no beam).

Batch mode: Barcodes are stored in the scanner even if the reader is connected to a device. In order to upload the data the user will have to read the "discharge" barcode

2.5.1/ Real time mode

Important reminder: if an ACK beep or bufferisation is needed, the scanner must be set in the "no data loss mode" first. (See part 1.2.2.)

REAL TIME mode:

Erases all codes in memory and
forces the RoadRunners in Real time mode.

No other setting is changed.



REAL TIME with ACK beep and bufferisation.

Forces the RoadRunners in Real Time mode (with data acknowledgement). Erases all codes in memory. The BRR should have been previously set in the "No data loss mode" ON.



REAL TIME without ACK beep and buffersiation.

Forces the RoadRunners in Real Time mode (without data acknowledgement). Erases all codes in memory. The BRR should have been previously set in the "No data loss mode" ON.



2.5.2/ Batch mode

BATCH MODE. Forces the RoadRunners in Batch mode.
Erases all codes in memory.



When in batch mode, The BRR will wait the appropriate command in order to start uploading the barcodes: this command can come

- from the Baracoda Manager
- from reading the “discharge” barcode here after

If this barcode is read when the reader is in batch mode and connected, the reader will automatically upload to the host all the data in its memory. If not in batch mode and not connected, the BRR-L will ignore this barcode.

→ For CPU firmware versions <3.16, only the following upload barcode is available:



When scanning this barcode, the BRR will send all barcodes in memory using the Baracoda header, with “no data loss mode” OFF.

→ For CPU firmware versions ≥3.16, this upload barcode is available:



This upload process consists in switching temporarily the BRR into Real time with “no data loss mode” ON (all the barcodes in memory will be sent using the no data loss protocol). Then the BRR switches back to batch mode when all the barcodes are properly sent.

2.6/ Cradle / RS232 jack

2.6.1/ Cradle

By default, the scanner Bluetooth is always ON. *(It wasn't the case for CPU version < 3.00)*



2.6.2/ RS232 jack

To communicate with the scanner through the RS232 cable instead of Bluetooth way, you have to scan this barcode.



Parameters are :
Baud rate : 115200
Parity : none
Data bits : 8
Stop bit : 1

Note : When the RS232 cable is not connected, it is possible to communicate with the scanner over Bluetooth.

2.7/ Buzzer and Led Settings

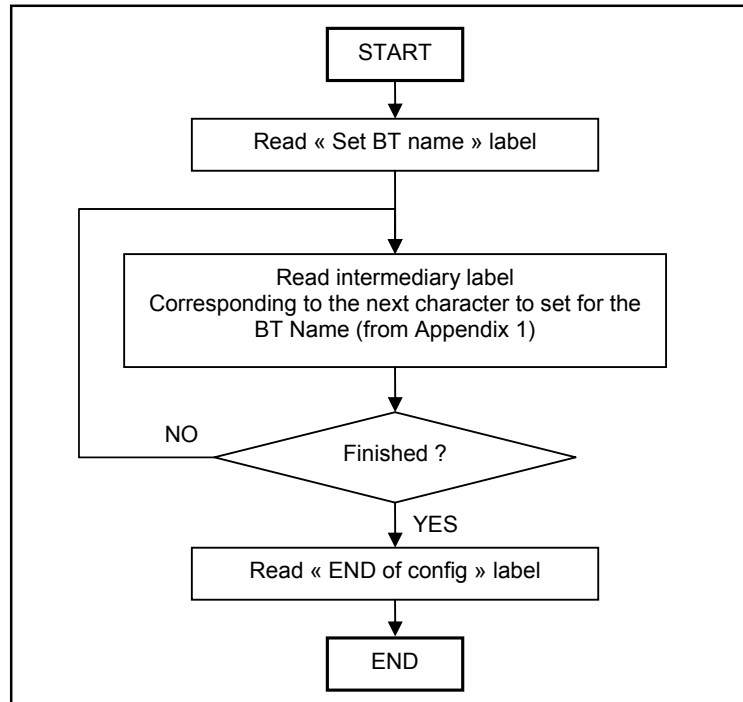
You can use these options to enable or disable the buzzer and / or the Led. You can also invert the led position.



2.8/ Bluetooth commands

2.8.1/ Bluetooth name

You can change the scanner Bluetooth name; name that you see during a search of Bluetooth peripheral.
(Feature enabled for CPU firmware version > 3.00)



Set BT Name

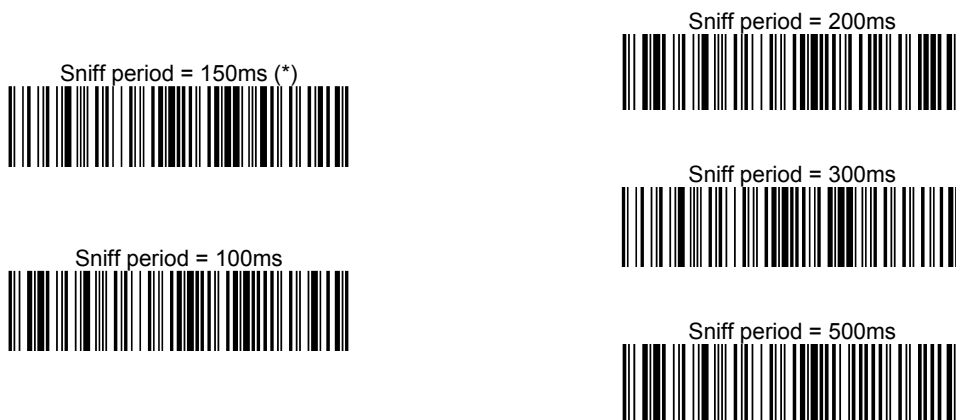


End of config



2.8.2/ Sniff settings

The higher the Sniff period, the higher is the latency and the smaller is the power consumption.
Default value is 150ms.



2.8.3/ Power emission settings

You can configure your scanner to work at 20 dBm (default setting) or 10 dBm.
Due to local laws, you may not use 20 dBm in some countries



2.8.4/ Security (code PIN) settings

Some BT device will not accept connections with devices that do not have a security code.



2.9/ Prefix and suffix

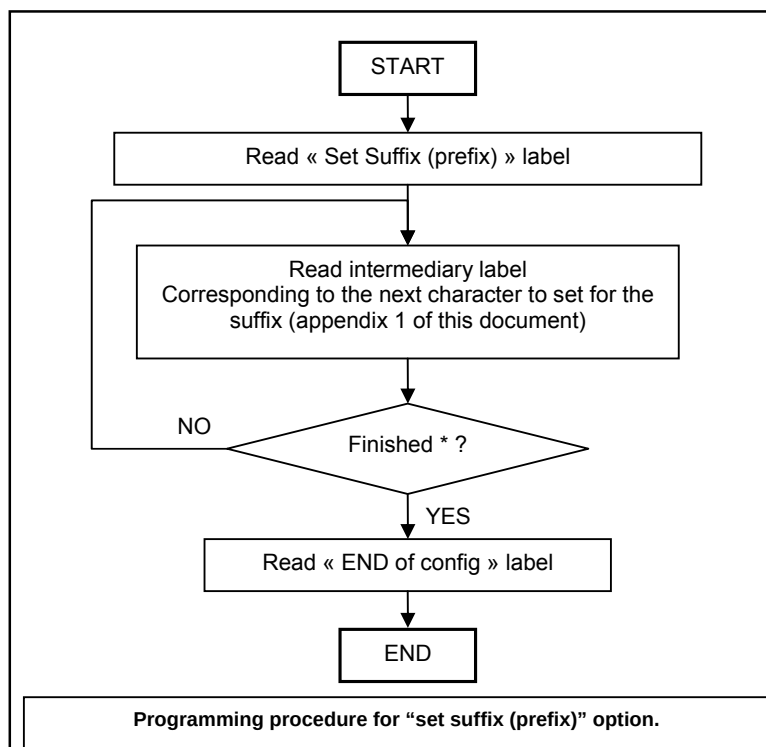
The barcode string can be added a prefix, a postprefix, a suffix and/or a postsuffix. These can come as described below:

prefix	postprefix	barcode	suffix	postsuffix
--------	------------	---------	--------	------------

2.9.1/ Prefix/suffix

You can add a prefix and/or a suffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device.

There is no prefix/suffix in default settings.



*= max length of the Suffix (Prefix) is 32 characters

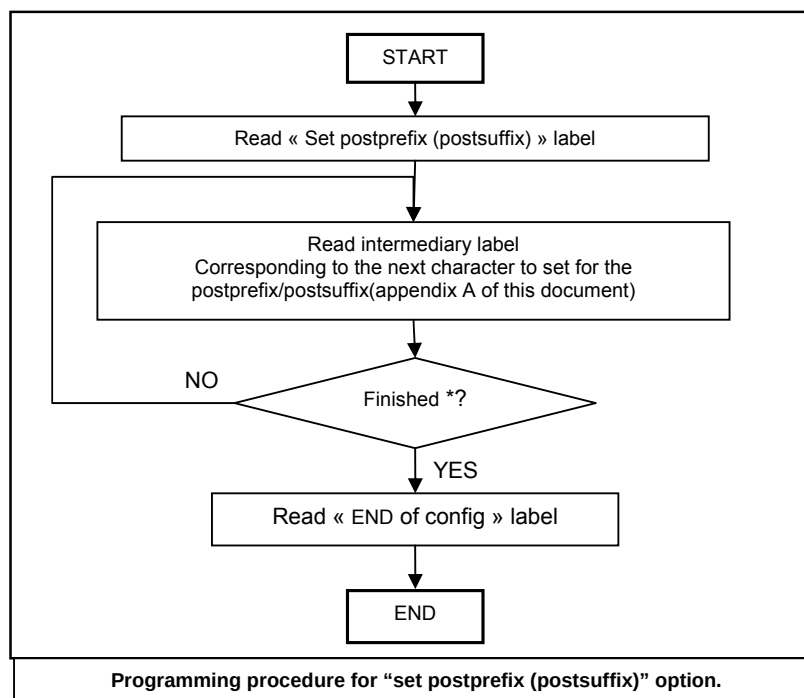


2.9.2/ Postfix/postsuffix

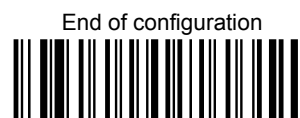
You can add a postfix and/or a postsuffix (strings of more than 32 characters will not be accepted) to every barcode sent to the host device.

(Feature enabled for CPU firmware version ≥ 3.16)

There is no postfix/postsuffix in default settings.



*= max length of the Suffix (Prefix) is 32 characters



3/ Decoder settings

3.1/ Symbology default settings

Sets the defaults decoder settings for all the symbologies



3.2/ Symbology Identifier

AIM Identifier will be transmitted at the beginning of the barcode. More information about the AIM Identifier available in Appendix2

Symbology identifier - AIM - not transmitted (*)



Symbology identifier - AIM - transmitted



3.3/ Voting

Standard voting set is 2. This means that a barcode is considered read by the decoder if the same data is decoded twice. Changing this parameters will enable a stronger security on the decoding of the barcode.

Voting = 2 (*)



Voting = 3



Voting = 4



3.4/ Disable All Symbologies

Even if all symbologies are disabled, the RoadRunners will always be able to read the programming barcodes of this document.

Disable all symbologies

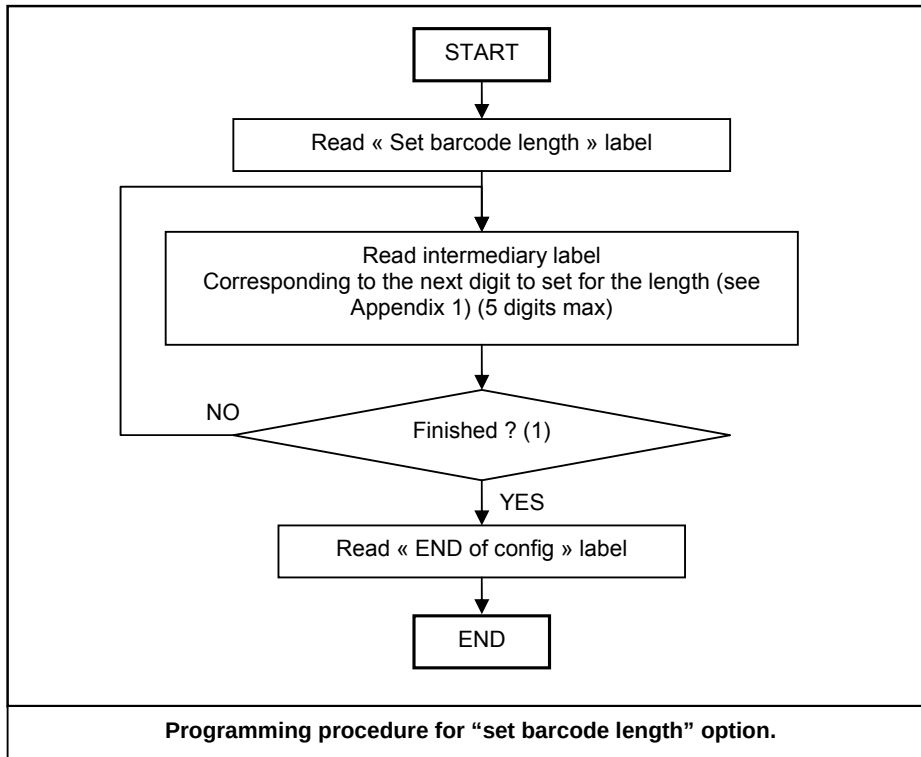


Enable all symbologies



3.5/ Set decoder barcode length

You can set a fixed length for the barcode decoding. The scanner will only decode barcodes of this length.
(Feature enabled for CPU firmware version ≥ 3.16)



3.6/ Codabar settings



Codabar - check digit (AIM recommendation) -
checked and transmitted



Codabar – barcode length Min=6 (*)



Codabar - check digit (AIM recommendation) -
checked but not transmitted



Codabar - barcode length - any length



3.7/ Code 11 Settings

Code 11 - not active (*)



Code 11 - check digits - checked and transmitted (*)



Code 11 - active



Code 11 - check digits - checked but not transmitted



Code 11 - check digits - 1 digit (*)



Code 11 - barcode length - any length



Code 11 - check digits - 2 digits



Code 11 – barcode length – Min = 6 (*)



3.8/ Code 39 settings

Code 39 - active (*)



Code 39 - format - standard 43 characters (*)



Code 39 - not active



Code 39 - format - full ASCII



Code 39 - check digit - not used (*)



Code 39 - start/stop - not transmitted (*)



Code 39 - start/stop - transmitted


Code 39 - start/stop - accepted characters - * only
(standard Code 39) (*)

Code 39 - start/stop - accepted characters - \$ only
(Trioptic Code 39)

Code 39 - start/stop - accepted characters - \$ and
* (standard and Trioptic Code 39)

Code 39 - check digit - modulo 43 - checked and
transmitted

Code 39 - check digit - modulo 43 - checked but not
transmitted


Code 39 - barcode length - any length (*)



Code 39 - barcode length - minimum length = 6



3.9/ Code 93 Settings

Code 93 - not active



Code 93 - active (*)



Code 93 - barcode length - any length



Code 93 - barcode length - minimum length = 6 (*)



3.10/ Code 128 Settings

3.10.1/ General

Code 128/EAN 128 - not active



Code 128/EAN 128 - barcode length - any length (*)



Code 128/EAN 128 - active (*)



Code 128/EAN 128 - barcode length - minimum length = 6



3.10.2/ EAN 128: Group Separator

'FNC1' included in an EAN128 code is transmitted by default as 'GS' (Group Separator – 0x1D).

(Feature enable for CPU firmware version > 3.00)

Enable GS transmission (*)

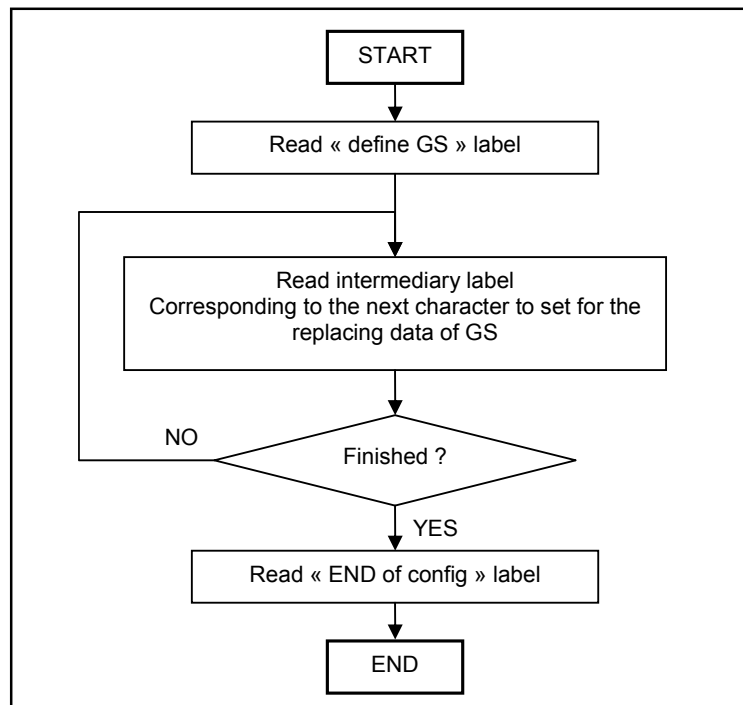


Disable GS transmission



It is possible to replace that 'GS' data to an other ASCII data.

(Feature enabled for CPU firmware version > 3.00)



Define GS



End of configuration



The common request to replace 'GS' by the | (pipe) can be done through the scan of :
(Feature enabled for CPU firmware version > 3.00)

Define | as GS



Even if the "AIM ID transmit" is disabled, it is possible to enable the AIM ID transmission for EAN128.
(Feature enabled for CPU firmware version > 3.00)

Enable AIM ID transmission for EAN128



Disable AIM ID transmission for EAN128 (*)



3.11/ Interleaved 2 of 5 Settings

Interleaved 2 of 5 - not active



Interleaved 2 of 5 – active (*)



Interleaved 2 of 5 - check digit - not used (*)



Interleaved 2 of 5 - check digit - mod 10 - checked
and transmitted



Interleaved 2 of 5 - check digit - mod 10 - checked
but not transmitted



Interleaved 2 of 5 - barcode length - minimum length
= 6 (*)



Interleaved 2 of 5 – barcode length- any length



3.12/ MSI Code Settings

MSI Code - not active (*)



MSI Code – active



MSI Code - check digit - mod 10 - checked and
transmitted (*)



MSI Code - check digit - mod 10 - checked but not transmitted



MSI Code - check digit - double mod 10 - checked but not transmitted



MSI Code - check digit - double mod 10 - checked and transmitted



MSI Code - barcode length - any length



MSI Code - barcode length - minimum length = 6 (*)



3.13/ Standard 2 of 5 Settings

Standard 2 of 5 - not active



Standard 2 of 5 - check digit mod 10 - checked but not transmitted



Standard 2 of 5 - active *



Standard 2 of 5 - barcode length - any length



Standard 2 of 5 - check digit mod 10 - not used (*)



Standard 2 of 5 - barcode length - minimum length = 6 (*)



Standard 2 of 5 - check digit mod 10 - checked and transmitted



3.14/ UPC/ EAN Settings

UPC / EAN - active (*)



UPC / EAN - UPC-A and EAN 13 deactivated



UPC / EAN - not active



UPC / EAN - UPC-E deactivated



UPC / EAN - EAN-8 deactivated



UPC / EAN - check digit - UPC-A and EAN13 - transmitted (*)



UPC / EAN - check digit - UPC-A/EAN 13 - not transmitted



UPC / EAN - check digit - UPC-E - transmitted (*)



UPC / EAN - check digit - UPC-E - not transmitted



UPC / EAN - check digit - EAN-8 - transmitted (*)



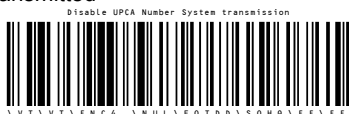
UPC / EAN - check digit - EAN-8 - not transmitted



UPC / EAN - UPC number system - UPC-A - transmitted (*)



UPC / EAN - UPC number system - UPC-A - not transmitted



UPC / EAN - UPC number system - UPC-E - transmitted (*)



UPC / EAN - UPC number system - UPC-E - not transmitted



UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-A transmitted as EAN-13



UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-A transmitted as UPC-A (*)



UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-E transmitted as UPC-E (*)



UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - UPC-E transmitted as UPC-A



UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - EAN-8 transmitted as EAN 8 (*)

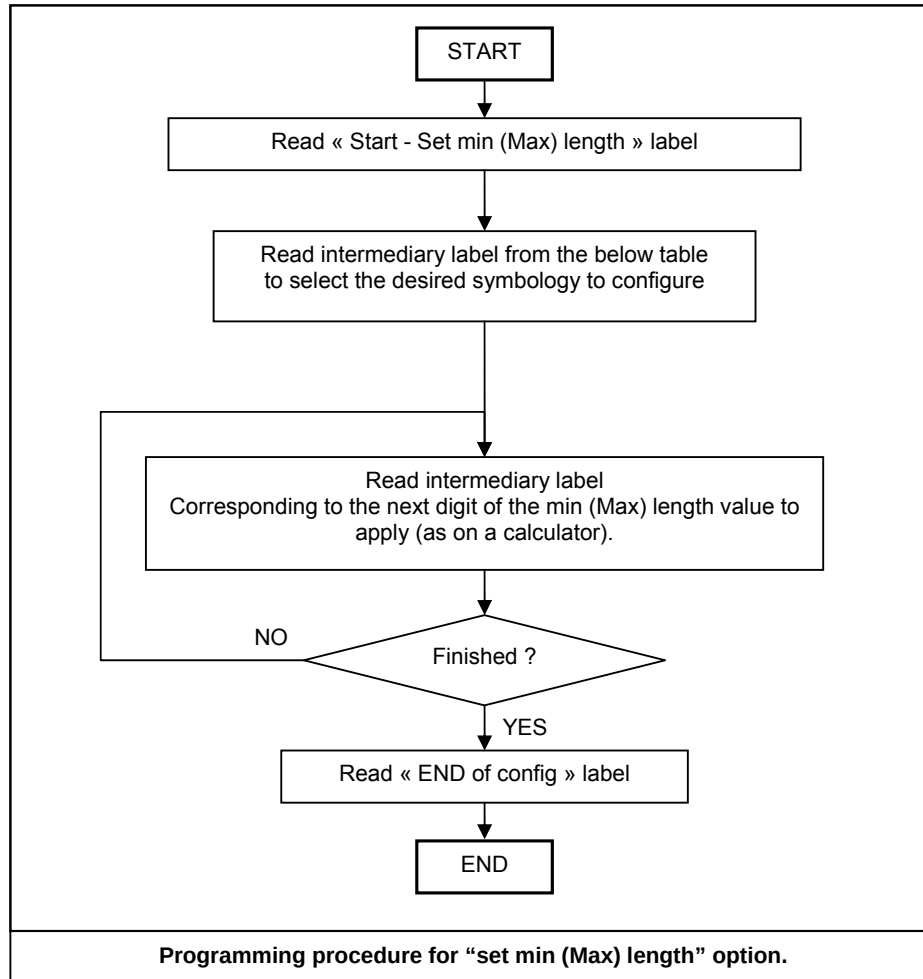


UPC / EAN - re-encoding UPC-A, UPC-E, EAN-8 - EAN-8 transmitted as EAN-13



3.15/ Set min or Max length option

The following is a procedure to follow for every barcodes



Symbology table

Header	Selected Symbology
	SELECT ALL
	Code 93
	Code 128 / EAN 128
	EAN 13 / UPC A
	Code 39
	Codabar
	Interleaved 2 of 5
	Standard 2 of 5 (industrial 2 of 5)
	Code 11
	MSI
	UPC E
	EAN 8

Start – set min length



Start – Set Max length



End of config



APPENDIX 1: ASCII Table (A-Z, a-z, 0-9, punctuation, Control characters)

Capital letters (A-Z) :

Name	Programming label
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	

Name	Programming label
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	

Small letters (a-z) :

Name	Programming label
a	
b	
c	
d	
e	
f	
g	
h	
i	
j	
k	
l	
m	

Name	Programming label
n	
o	
p	
q	
r	
s	
t	
u	
v	
w	
x	
Y	
z	

Punctuation

Space	
!	

"	
#	

\$	
%	
&	
,	
(	
)	
*	
+	
,	
-	
.	
/	
:	
;	

<	
=	
>	
?	
@	
[	
]	
^	
_	
{	
	
}	
~	

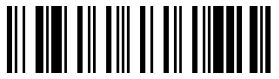
Decimal numbers (0-9) :

Name	Programming label
0	
1	
2	
3	
4	

5	
6	
7	
8	
9	

Control Characters:

Name	Programming label
CR	
EOT	
ETX	
LF	

NUL	
SOH	
STX	
TAB	

APPENDIX 2

The SI prefix is a two or three character string:

] c m where

] : SI indicator

c : Symbology Identification

m : Modifier characters (optional)

Symbology Character

A	Code 39
B	Telepen
C	Code 128
D	Code One
E	EAN/UPC
F	Codabar
G	Code 93
H	Code 11
I	ITF 25
K	Code 16K
L	PDF417

M	MSI code
N	Anker Code
O	Codablock
P	Plessey Code
R	Straight 2 of 5 (two bar start/stop codes)
S	Straight 2 of 5 (three bar start/stop codes)
T	Code 49
X	Other Bar code
Z	Non Barcode data

Modifier Characters

The modifier character is determined by summing the option values of each symbology. If the sum is greater than 9, use A, B, C, D, E , F in the place of 10, 11, 12, 13, 14 and 15.

Code 39 Option Values

0	No check character or Full ASCII
1	Reader has performed mod 43 check
2	Reader has performed mod 43 check and stripped the check character
4	Reader has performed Full ASCII conversion

Telepen Option Values

0	Full ASCII mode
1	Double density numeric mode
2	Double density numeric followed by full ASCII
4	Full ASCII followed by double density numeric

Code 128 Option Values

0	Standard
1	Function code 1 in first character position
2	Function code 2 in second character position
4	Concatenation according to ISBT specification has been performed, and concatenated data follows.